

REMARKS

Claim Status

Claims 1-20 are pending. Claims 1-7 and 20 stand withdrawn. Claims 10-12, 14, and 16-19 stand objected to, but allowable in rewritten appropriately. Applicant appreciates the examiner's indication of allowable subject matter.

Claims 8, 9, 13, and 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,201,401 to Hellemans et al., hereinafter "Hellemans," in view of U.S. Patent No. 6,530,266 to Adderton et al., hereinafter "Adderton."

Applicant respectfully traverses the grounds for rejection and requests reconsideration and withdrawal of the rejections of and the objections to claims 8-19 in view of the following.

Rejections Under 35 U.S.C. § 103

Independent Claim 8

Independent claim 8 includes features that are neither disclosed nor suggested by the cited references, either taken alone or in combination, namely:

8. (Original) A method for *determining impedance information of an interface in a sample*, the method comprising the steps of:

- (a) applying an ac voltage to the *sample*, laterally across the interface, the ac voltage having a predetermined frequency;
- (b) disposing a cantilevered tip in a first position proximate to a surface of the *sample*;
- (c) measuring a first response of the cantilevered tip with the cantilevered tip in the first position;
- (d) placing the cantilevered tip in a second position proximate to the surface of the sample, the interface being between the first position and the second position;
- (e) measuring a second response of the cantilevered tip with the cantilevered tip in the second position; and
- (f) *determining impedance information of the interface based upon the measured first response and the measured second response.* (emphasis added)

Claim 8 is directed to determining impedance information of an *interface of a sample*. To determine the impedance information, a cantilevered tip is disposed proximate the surface of the sample and responses are measured from the tip. Based on the responses, impedance information is determined.

Hellemans does not disclose or suggest determining impedance information of the interface (conceded by the examiner in the Office Action at page 3, third paragraph). As such, the examiner relies on Adderton as disclosing determining impedance information of the interface of the sample. Adderton, however, only determines the impedance of *piezoelectric element of cantilever 20* (which is part of the equipment used to analyze *sample 28*). Adderton is directed to measuring the topography of a sample (Abstract at lines 4-5), and to measure that topography, Adderton discloses a device having a piezoelectric element 36. Adderton uses an impedance measurement from element 36 to determine a topography of a sample. That is, Adderton determines the impedance of one part of the measurement equipment to analyze the sample (i.e., damping circuit 62), not the impedance of the *sample interface* itself (Adderton c. 8, ll. 65-66, c. 11, ll. 60-62). Therefore, assuming arguendo that there is some suggestion or motivation to combine Adderton with Hellemans, the resulting combination would not result in the claims as recited, as neither reference discloses or suggests determining impedance information of a sample's interface.

The examiner takes the position that the applicant has not argued the claim language. (There is no "determine impedance of the sample interface" claimed in independent claim 8. – Office Action at page 6, lines 3-4). Claim 8, however, clearly recites "*determining impedance information of the interface*" and "*determining impedance information of an interface in a sample*." Therefore, the language of claim 8 clearly includes determining impedance information of an interface in a sample.

The examiner next takes the position that Adderton teaches determining impedance information of the interface. The cited portions of Adderton, however, clearly only disclose determining the impedance of a piezoelectric element that is part of the measuring device itself, not determining impedance information of the *interface of a sample*, as recited by the claims. Adderton at c. 8, ll. 59-67 (similar to c. 11, ll. 54-60) discloses "a circuit for measuring the impedance of the piezoelectric element of self-actuated cantilever 20." Cantilever 20 is part of the measuring device 10, not the sample 28 (Adderton Fig. 1). Therefore, Adderton does not disclose or suggest determining impedance information of an interface of a sample.

Moreover, Adderton does not disclose or suggest determining impedance information of the interface *based upon the measured first response and the measured second response*,

as recited by the claims. In contrast, Adderton simply discloses a conventional *circuit* for measuring impedance information of the piezoelectric element 36 of cantilever 20. Such a conventional circuit does not determine impedance information based on a measured first response and a measured second response. Even more specifically, the claims recite that the measured first and second responses are measured in a first and second position, respectively. Such a conventional circuit for measuring impedance of a piezoelectric element does not measure impedance by measuring responses in a first and second position. The examiner does not argue that the conventional circuit measurement of Adderton discloses determining impedance information based on a measured first response and the measured second response wherein the measured first and second responses are measured in a first and second position, respectively. Nor does the examiner cite to any portion of Adderton or Hellemans for the proposition that either of these references discloses such a feature.

Accordingly, applicant submits that the cited references, either taken alone or in combination, do not disclose or suggest the features of independent claim 8. Additionally, inasmuch as dependent claims 9-19 (which have also been rejected or objected to over the cited references) are dependent on claim 8, these claims are patentable over the cited references, at least by virtue of their dependency. Accordingly, applicant respectfully requests reconsideration and withdrawal of the rejections of and the objections to claims 8-19 under 35 U.S.C. § 103.

Conclusion


For all the foregoing reasons, applicant respectfully submits that the present application is now in condition for allowance. Reconsideration of the Office Action and an early Notice of Allowance are respectfully requested. In the event that the examiner cannot allow the present application for any reason, the examiner is encouraged to contact the undersigned attorney, Raymond N. Scott Jr. at (215) 564-8951, to discuss resolution of any remaining issues.

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Woodcock Washburn LLP
One Liberty Place - 46th Floor
Philadelphia PA 19103
Telephone: (215) 568-3100
Facsimile: (215) 568-3439

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Raymond N. Scott, Jr.
Attorney for Applicant
Registration No. 48,666